

Puget Sound Nearshore Habitat: A Summary of Current Threats and Obstacles

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Background

The loss of Puget Sound nearshore habitat¹ concerns resource managers and scientists because these areas play a critical role in maintaining healthy populations of marine life. A marine science panel created through an international effort between Washington and British Columbia found that nearshore habitat is being lost at an alarming rate and stated that efforts must be taken immediately to improve protection of this important area.

The Puget Sound/Georgia Basin Task Force created the Nearshore Habitat Loss Work Group (composed of tribal, state and federal government representatives and two non-governmental organizations) in order to respond to this concern. The Work Group found that there was little information available regarding current activities causing the most harm. In order to make recommendations for improved protection of the nearshore, the Work Group needed to know what was causing the greatest damage, and how the regulatory system was dealing with the problems.

In 1993, Thurston County documented the prevalence and rate of shoreline armoring in Thurston County (Morrison, Kettman and Haug, 1993). Those data show a 110% increase in the amount of shoreline armored from 1977 to 1993. Budd Inlet, the most heavily developed marine water body in the county, had 47% of its shoreline armored in 1993. The Thurston County study demonstrated that armoring caused tremendous habitat alteration in Thurston County. It provided no information outside the county and no comparative data were available. Little information was available regarding current Sound-wide nearshore losses associated with human activities.

Some shoreline permit data are available through individual local governments but the databases are limited and often difficult to obtain. Data for Hydraulic Project Approvals are compiled by the Washington Department of Fish and Wildlife (WDFW) (data are reliable after 1990), but provide only number of permits issued without any information on size of impact or type of habitat altered.

This study was conducted for the Work Group members to better understand what human activities are causing damage to nearshore habitat and how the regulatory system is addressing the most damaging activities. We interviewed 28 people with a variety of knowledge and experience to find out what they were witnessing out on the nearshore and what activities they were concerned about. The people interviewed included county, city and tribal shoreline managers, federal and state regulators, scientists, a former Shoreline Hearings Board member and a former county commissioner.

Findings

The findings of this study include an analysis of the current regulatory system and a list of other needs pertinent to the management of the nearshore. None of the findings are terribly surprising. Many of the issues have been raised in previous studies, but have not been acted on.

The greatest threats to the nearshore according to those interviewed are shoreline armoring, residential development, large commercial or industrial development projects, water quality and overwater structures (e.g., docks, piers). *Spartina* infestations also appear to be a growing problem.

The management of the Puget Sound nearshore is full of gaps. The regulatory system is piecemeal and inadequate. There are many agencies and different levels of government involved in regulating the nearshore, but no one entity is responsible to manage or evaluate the system holistically. The number of agencies involved in the regulatory business gives the public the perception that the area is heavily regulated.

There is an important difference between the way in which commercial activities and single-family residential activities are regulated. Single-family residential development activities are generally given much less rigorous review and considered to have insignificant impacts. Sound-wide, however, these individual activities add up to a significant amount of nearshore habitat losses that are not being tracked, tallied or evaluated. Individual residential losses are also generally not compensated for through mitigation. Commercial or industrial activities receive tremendous scrutiny and undergo mitigation sequencing (a policy that requires applicants to avoid, minimize, rectify and compensate impacts in that order of preference).

An important attribute of the regulatory system is that local governments have a great deal of authority to limit, condition or deny development projects that would cause harm to the nearshore. Local governments also have the ability to customize regulations to the specific needs and sensitivities of their shoreline through their shoreline master programs. Several powerful limitations are present at the local level however, and they include: the political will to use regulatory authorities; knowledge of the biological resources that use the nearshore; and understanding the effects of different types of development to the nearshore. Political will can be a tremendous obstacle.

Another shortcoming of the current system is that there are inadequate inventories of nearshore habitats and biological resources. Maps are outdated and inaccurate. Without better resource information, regulators can not make a case for preventing damage to the resources. For example, inventory of surf smelt spawning areas are very limited, yet this species can be greatly affected by armoring. WDFW officials can not deny or condition a permit application unless the site has documented surf smelt populations, even if the site appears to be optimal for their spawning.

Most of the Puget Sound local shoreline master programs were written 15–20 years ago and have not been significantly updated to reflect growing development pressures and cumulative impacts of development activities. Nor do they recognize the impacts that occur with each individual permit application. This is true for state and federal regulations as well.

State and federal agencies are limited in their authorities provided through the Shoreline Management Act, the Hydraulics Code, and the Clean Water Act, and can only intervene in specific circumstances. The Department of Ecology's role in reviewing local substantial development permits is an important mechanism to help prevent damaging development activities. WDFW field staff provide very important technical assistance to local governments in the processing of hydraulic permits. In both cases, there are significant limitations in the agencies' authorities that stem from local government's abilities to exempt single-family residential bulkhead and dock projects as directed in the Shoreline Management Act. Federal agencies rarely are involved in residential permits.

Because of the flexibility allowed in developing local shoreline regulations, the nearshore is being regulated differently throughout Puget Sound. There are 12 counties, 34 cities, seven tribal reservations, and numerous state-owned and federally owned lands. Each jurisdiction and agency has its own method for regulating their piece of shoreline. In many cases, the individual jurisdictions and staff are focused on upland considerations rather than preventing damage to habitat at or below the shoreline. The result is a variety of permitting systems with varying degrees of protection to the nearshore. A few jurisdictions recently made changes to their shoreline management programs aimed to better protect residences from erosion problems and at the same time improve habitat protection. Some jurisdictions now process bulkhead requests as substantial development permits and require geotechnical justification.

The majority of local governments, however, do not process single-family residential bulkhead requests as substantial developments. This means that there may be no evaluation of whether or not the bulkhead is needed to control an erosion problem. Most of those interviewed said that many shoreline landowners automatically assume that a bulkhead is needed to prevent erosion. In some cases landowners want a bulkhead for landscaping purposes or feel that it is necessary to maintain real estate values.

Shoreline construction activities have significant effects to the nearshore because the vegetation is cleared and replaced with impervious surfaces. Roofs, driveways and lawns create impervious or nearly impervious surfaces that cause rainwater to drain down bluffs (rather than percolating into the soil) and

create additional erosion problems. The addition of lawn watering and on-site septic systems further exacerbates saturation problems at the top of bluffs. Some landowners incorrectly believe that a bulkhead at the toe of a bluff will minimize erosion at the top. More information is needed to clarify the utility of bulkheads and to enable landowners to prevent erosion caused by excess drainage.

When the guidelines for shoreline master programs were originally written in the early 1970s, there was little concern over the construction of bulkheads or docks for single-family residences. The language in the Shoreline Management Act was written to facilitate the construction of these “normal features” for waterfront homes. Currently, however, we understand that bulkheading and other types of armoring can cause beach scouring and destroy natural habitat for many types of baitfish. The damage associated with armoring is known and documented (Thom, Shreffler, and Macdonald, 1994), but there is no comprehensive tracking of armoring rates Sound-wide. We also know that over-water structures such as docks and piers can cause shading problems for eelgrass. Despite this knowledge and documentation in the literature, regulations have not been updated to limit the construction of these features.

Physical alterations of the shoreline are not the only activities causing problems. Scientists are increasingly concerned about the effects of runoff to nearshore habitats. Eutrophication at the mouth of Chimacum Creek in Jefferson County and in other areas of Puget Sound have been found (Thom, 1997). Storm water runoff, farm runoff, and failing on-site septic systems all contribute contaminants to the nearshore and ultimately to the Sound. Few local governments have a handle on preventing these problems.

All of the activities causing damage to the nearshore can be minimized or prevented through updated regulations and better education regarding the impacts of the activities. Unfortunately, education programs remain underfunded.

Permit tracking is extremely limited but improvements could help to document cumulative effects. The Washington Department of Natural Resources (DNR) has prepared an analysis of shoreline modification throughout Puget Sound (Figure 1). Berry (1997) found that approximately one-third of Puget Sound's intertidal zone, the area that is regularly covered by water, has been modified. That data along with information from interviews demonstrate that there are regional differences in the amount of nearshore that has been lost or altered and there are different causes for those losses.

Key Points

- Nearshore habitat continues to be lost incrementally and insidiously due to both direct physical alteration and water quality degradation. Major activities of concern are bulkheads, development and nutrient runoff. Single-family residential development activities, such as bulkheading and dock construction, generally do not require compensatory mitigation and cause continued loss of nearshore habitat. Large development activities are required to provide compensatory mitigation, but the mitigation projects do not always achieve success.
- Local governments are empowered to protect the nearshore by minimizing development impacts, but local government staff and leaders often do not understand the value and functions of the nearshore or the connection between upland/shoreline development and degradation to the nearshore.
- The piecemeal approach to managing the nearshore will not enable us to evaluate the health of the nearshore holistically. Permit-by-permit processing does not allow an agency to evaluate cumulative effects. Several development activities shown to be harmful to the nearshore are considered “insignificant” to the environment by state and federal laws.
- Regulations, particularly shoreline master programs, need to be updated to reflect current knowledge about the effects of development activities (e.g., bulkheading, runoff) and to better protect our marine resources that rely upon a healthy nearshore (e.g., salmon, surf smelt).

There is a great need for better education and dissemination of research regarding the nearshore. Key audiences are local government staff, shoreline landowners, developers and elected officials. The full report Puget Sound Nearshore Habitat Regulatory Perspective: A Review of Issues and Obstacles is available from the Puget Sound Water Quality Action Team.

References

- Berry, H. 1997. Unpublished data. Washington Department of Natural Resources, Olympia, WA.
- Morrison, S.W., J.K. Kettman, and D. Haug. 1993. Inventory and Characterization of Shoreline Armoring, Thurston County, Washington, 1977–1993. Prepared by Thurston Regional Planning Council for Washington Department of Ecology, Olympia, WA.
- Thom, R. 1997. Personal communication. Battelle Marine Science Laboratory, Sequim, WA.
- Thom, R., D. Shreffler, and K. Macdonald. Shoreline Armoring Effects on Coastal Ecology and Biological Resources in Puget Sound, Washington Coastal Erosion Management Studies Volume 7. Washington Department of Ecology, Olympia, WA.

¹ Defined as the area from 200 ft above ordinary high water mark down to the shallow subtidal.